

REMARKS

This paper is filed in response to the final Office Action mailed July 30, 2007 (hereinafter "Office Action"). Claims 1-18, 27-31, and 33-37 are pending in the application. Claims 1-18, 27-31, and 33-37 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,282,454, issued to Papadopoulos et al. (hereinafter "Papadopoulos et al.") further in view of U.S. Patent No. 6,401,131, issued to Haverstock et al. (hereinafter "Haverstock et al."). Claims 10, 11, 16, 22, and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Papadopoulos and U.S. Patent No. 6,484,148, issued to Jammes et al. (hereinafter "Jammes et al.") in view of U.S. Patent No. 6,453,687, issued to Sharood et al. (hereinafter "Sharood et al.").

Rejection of Claims 1-18, 27-31, and 33-37 Under 35 U.S.C. § 103(a)

As indicated above, Claims 1-18, 27-31, and 33-37 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Papadopoulos et al. further in view of U.S. Patent Haverstock et al. Applicants respectfully submit that the above claims of the present application, as amended, are patentable over Papadopoulos and Haverstock et al., either alone or in combination. The cited art, alone or in combination, fails to teach or suggest "a remote computer operative to receive user-defined non-markup language configuration data defining attributes of said Web site" as recited in the claims. Prior to discussing more detailed reasons why applicants believe that all of the pending claims of the present application, as amended, are allowable over Papadopoulos et al. and Jammes et al., a brief description of the present invention and the cited references is presented.

Summary of the Present Application

The present application generally relates to the field of process control systems. More particularly, the present application is directed toward providing the ability to define attributes of a Web site without using a markup language, wherein that Web site may then be used to provide information regarding the operation of a control system, such as a programmable logic controller

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("PLC"). Additionally, upon receipt of a non-markup language that defines the attributes of a Web site, the claimed invention stores that data in a manner that requires less memory space than storing conventional markup language Web pages.

In an embodiment, the invention includes a Web server module configuration application that provides an easy-to-use interface for defining attributes of a Web site that may be used to provide information about a control system. (See Application, p. 12.) In particular, the Web server module configuration application allows a user to define attributes of a Web site using a non-markup language by providing the user with easy-to-use menus and interfaces. The menus and interfaces allow a user to design a Web site through selections on a number of display screens rather than through the use of a markup language. (*Id.*) The Web server module configuration application stores the user-made selections in a non-markup language Web site database and transmits that database to the Web server module. (*Id.*) The Web server module utilizes the contents of the non-markup language Web site database to dynamically generate markup language pages for a user when a request is received. (*Id.*)

Once a user has defined the Web site via the Web server configuration application, the Web server configuration application stores the information as a non-markup language Web site database, also referred to in the application as a screen database (e.g., FIGURE 5, element 112) and transmits that database to the Web server module. (*Id.* at 15.) When requested, the Web server module utilizes the contents of the non-markup language Web site database to dynamically generate markup language Web pages. (*Id.*) Information about the control system may then be provided to a user via the dynamically generated Web pages.

Numerous advantages may be realized by the system, method, and apparatus recited in the claims of the present application. In one aspect, a user may define, from a remote location, a Web site that may later be used for providing information regarding the operation of a control system without having to use a markup language. As discussed in the Background section of the application and as discussed below with respect to Papadopoulos, the main drawback with

existing Web server-based systems for accessing data contained in the memory of a control system is the difficulty in creating and modifying the Web site that is provided by the Web server module. This process is typically an arduous one that involves an operator creating each of the Web pages of the Web site using a standard markup language, such as the hyper-text markup language ("HTML") or extensible markup language ("XML"), and possibly a programming language such as JAVA®. While PLC operators are often well versed in ladder logic, HTML, XML, and JAVA are typically foreign topics. Providing a system, method, and apparatus that allows a user to define a Web site using non-markup languages resolves this drawback of existing server-based systems such as Papadopoulos.

In another aspect, embodiments of the present invention store data defining a Web site in a manner that requires less memory than storing conventional markup language Web pages. Web servers generally use non-volatile memory to store conventional markup language Web pages and any associated information, such as graphics. Typically, a standard file system is created within the non-volatile memory with all the HTML contents for a page rendering stored there. For large Web sites, such a storage scheme results in a large amount of non-volatile memory being consumed. The claimed invention, in contrast, only stores the information necessary to generate a Web site when requested, thereby reducing memory requirements.

Papadopoulos et al. (U.S. Patent No. 6,282,454)

Papadopoulos is purportedly directed toward a Web interface for a programmable controller. The stated goal of Papadopoulos is "to develop an automation control system whereby a user could use general, commercial networks such as the Internet in place of specialized industrial networks to remotely monitor automation control devices such as PLCs." (Papadopoulos, Col. 2, lines 25-30.) In accordance with that goal, Papadopoulos describes as follows:

a system of essential elements including . . . a Web interface, a local network, and a network interface to at least one PLC control system . . . The Web interface runs Web pages from an Ethernet board coupled directly to the PLC back plane and includes an HTTP protocol interpreter,

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a PLC back plane driver, a TCP/IP stack, and an Ethernet board kernel. (Col. 2, lines 45-54.)

In using the system, Papadopoulos describes that a user can enter the address of the Web site that will display a home page that may contain text; some type of multimedia offerings such as graphic images, video, or audio; and possibly hypertext links to other documents. The Web site home page and other pages of the Web site are provided by the Web server. (Col. 4, lines 10-15.)

While Papadopoulos describes the ability for a user to obtain snapshots of the status of a control system from a remote location via seven predefined Web pages, Papadopoulos fails to teach or suggest a system or method for user to define attributes of a Web site that is used to provide that information, as called for in the claims of the present application. Likewise, Papadopoulos fails to teach or suggest how the Web site that is used to provide information regarding the PLC is stored. As such, there is no teaching or suggestion of storing a non-markup language Web site database defining attributes of a Web site associated with the control system, wherein the non-markup language Web site database is in a format that may be utilized by a central processing unit to dynamically render Web pages of the Web site. Papadopoulos is limited to a system that uses conventional markup language Web pages to provide snapshots of control system information.

Haverstock et al. (U.S. Patent No. 6,401,131)

Haverstock et al. is purportedly directed towards a tool for facilitating access to non-HTML documents into a format supported by a Web browser. (Abstract.) In accordance with Haverstock et al., a module on a Web server obtains process a request for a non-HTML document by translating the document into a format for viewing by a Web browser. Accordingly, the system taught in Haverstock et al. is directed to the ability to view Web pages and non-HTML documents via a Web browser.

Haverstock et al. fails to teach a method for obtaining user-defined attributes of a Web site that is used to provide a status of a control system from a remote location. Haverstock et al.

is limited to a method for processing non-HTML document requests by translating the non-HTML document into a format supported by a Web browser. As such, there is no teaching or suggestion of modifying and customizing a predefined Web site by utilizing a Web server module configuration application which resides on the user's computer to obtain user input and creates a Web site database transmitted to a Web server module.

The Claims Distinguished

Independent Claims 1, 27, and 38.

As amended, Claim 1 recites:

1. A system for providing information regarding the operation of a control system, comprising:

a Web server module associated with said control system, said Web server module having a memory operative to store a non-markup language Web site database that may be used to dynamically generate a markup language Web page in response to a request, wherein said Web site page is populated by the Web server module with information regarding the operation of the control system in response to the request;

a remote computer operative to receive user-defined non-markup language configuration data defining attributes of said Web site, to store said configuration data as said non-markup language Web site database, to aid said Web server module to transmit said non-markup language Web site database to said Web server module, and to request and receive said markup language Web page from said Web server module; and

a Web server module configuration application operative to create said non-markup language Web site database and to transmit said database to said Web server module in response to the request.

Applicants agree that Papadopoulos fails to teach or suggest a Web server module that utilizes non-markup language to define attributes of a Web site. As recited above, Claim 1 recites "a remote computer operative to receive user-defined non-markup language configuration data defining attributes of said Web site." A system, method, and apparatus that provides the ability to define attributes of a Web site using a non-markup language enable users to easily create a Web site without having to know a markup language syntax. As also recited in Claim 1, storing attributes that may be used to dynamically generate a Web page, as opposed to storing

conventional Web pages and associated information, reduces the total amount of required memory.

As discussed above, Papadopoulos is limited to teaching a Web interface module for facilitating access to information or control of a programmable logic controller. Papadopoulos in no way contemplates the ability for users to define the attributes of Web sites related to programmable logic controllers without utilizing a markup-language. Applicants respectfully suggest that the Web interface module taught in Papadopoulos can only process data rendered in traditional markup language. Accordingly, it could not facilitate the creation of Web site data utilizing non-markup language as recited in Claim 1.

Applicants respectfully submit that Haverstock et al. fails to make up the deficiencies relate to the teachings of Papadopoulos. As stated above, Haverstock et al. teaches the translation of non-HTML documents into a form viewable by a Web browser. While Haverstock et al. may teach the utilization of templates for generating Web pages, it in way teaches or suggest the ability for users to define the attributes of Web sites related to programmable logic controllers without utilizing a markup-language.

Under 35 U.S.C. § 103, a *prima facie* case of obviousness is established only if the cited references, alone or in combination, teach each of the limitations of the recited claims. *In re Bell*, 991 F.2d 781 (Fed. Cir. 1993). For the reasons discussed above, applicant respectfully submits that the cited references fail to teach or suggest "a remote computer operative to receive user-defined non-markup language configuration data defining attributes of said Web site, to store said configuration data as said non-markup language Web site database, to aid said Web server module to transmit said non-markup language Web site database to said Web server module, and to request and receive said markup language Web page from said Web server module" as recited in Claim 1. Accordingly, independent Claim 1 is patentable over Papadopoulos and Haverstock et al., and withdrawal of this rejection is requested.

In a similar manner, independent Claim 27 recites "receiving user-defined non-markup language configuration data defining attributes of a Web site wherein the Web sit corresponds to aspects of a programmable logic controller defined by a user." As stated above, the cited art, alone or in combination, fails to teach or suggest "a remote computer operative to receive user-defined non-markup language configuration data defining attributes of said Web site" as recited in the claims. Moreover as recited in Claim 27, neither Papadopoulos nor Haverstock et al., teach or suggest the definition of user defined attributes of a Web site relate to programmable logic controllers. Papadopoulos in no way contemplates the ability for users to define aspect of the controllers. Haverstock et al. is simply limited to teaching a translation engine not related to user defined aspects of any web site, let alone a programmable logic controller. Accordingly, in addition to the reasons recited with regard to Claim 1, independent Claim 27 is patentable over Papadopoulos and Haverstock et al., and withdrawal of this rejection is requested

Dependent Claims 2-18, 28-31 and 33-37

Claims 2-18 depend from Claim 1; Claims 28-31 and Claims 33-37 ultimately depend from Claim 27; Claims 33-37 ultimately depend from Claim 27. As discussed above, Papadopoulos combined with Haverstock et al. fail to render obvious each of the limitations recited in Claims 1, and 27. Accordingly, for the above-mentioned reasons, Claims 2-18, 28-31, and 33-37 are likewise believed to be allowable over Papadopoulos and Haverstock et al., alone or in combination.

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CONCLUSION

Based on the amendments and remarks above, applicants respectfully submit that all of the claims pending in the present application, Claims 1-18, 27-31, and 33-37, are allowable over the cited and applied references. If the Examiner has any questions, the Examiner is invited to contact applicants' undersigned attorney at the number provided below.

Respectfully submitted,

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